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ABSTRACT

Principals can better learn to support an instructional reform when classes for professional development use the new instructional method, giving them a first hand understanding of its effectiveness. Constructivist teaching is supported by the National Research Council's "How People Learn" and the Students at the Center initiative. Students at the Center used constructivist teaching during principal professional development for the Philadelphia school district, to demonstrate its methods and benefits before the principals were asked to support this method for their teachers. It is learner-centered, attempting to engage the learner in actively building new understandings and skills. Assessment includes opportunities for feedback and revision through discussion, papers, or tests. Constructivist classrooms do not look like or sound like the average classrooms. More noise and movement can be a sign that students are emotionally engaged in learning. Students must work in project-oriented groups with self-chosen topics, share with other groups, move around the room, and use manipulative materials. The principals had a very positive reaction. Most participants were struck by how isolated they had felt before the collegiality of the constructivist workshops. They appreciated that information shared did not have to conform to an agenda. Most significantly, they understood from their own experience that assessment of a teacher's classroom could be based on how engaged the students were rather how quietly they were sitting. (Contains 16 references.) (Author/RKJ)

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Shaping the Work Environment for Teachers: How Principals Can Learn to Support Instructional Reform

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As the assigned leaders of school environments, principals have an opportunity to play a unique role in supporting teachers' professional growth. Through the decisions they make and how they make them, principals shape the work environment in schools so that it supports or challenges teachers' efforts toward learning and change. This impact becomes particularly clear in the context of instructional reform efforts, where teachers' needs are linked to specific goals for teaching and learning set forth by a state, district, foundation, or other organization. Research shows that in schools engaged in such reform efforts, principals play a vital role in creating a supportive learning environment for teachers, and that principals' beliefs about teaching and learning, and their conception of their role shape their ability to do so (Nelson, 1997; Nelson, 1999; Spillane & Thompson, 1997). However, most reform efforts assume that principals are able to take on the task of supporting instructional reform, despite research which demonstrates that principals themselves frequently feel that they do not have the necessary knowledge or skills (Neufeld, 1997; Nelson & Sassi, 1998). A situation in which a principal does not feel secure in his or her ability to support a reform and does not receive help doing so can lead to principal

[1] This research was conducted at the Center for Research on the Context of Teaching as part of an evaluation contract with the DeWitt Wallace – Reader's Digest Fund. Any opinions expressed here are those of the author and do not necessarily reflect those of the funding organization.

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strain and a less effective learning environment for teachers (Bredeson, 1993; Spillane & Thompson, 1997).

Despite research supporting professional development for principals engaged in instructional reform, few reform efforts provide this kind of support. Professional development for principals primarily consists of learning about new state and district policies in short workshops, and principals centers, usually housed in universities and sometimes linked to state departments of education (Hallinger, 1992; Hallinger & Murphy, 1991). Principals centers offer administrators opportunities to engage in reflection with peers and a safe environment for challenging and expanding beliefs about leadership practice (Barth, 1985), which undoubtedly assist principals in learning how to support teacher professional growth. However, they are not usually linked to the specific reform efforts occurring in participants' schools. Research on the few instructional reform efforts which provided learning opportunities for principals offers evidence that administrators appreciate having an opportunity to expand their knowledge of the kinds of teaching and learning sought by the reforms, and to learn about and discuss with their peers how to support teacher learning and change (Nelson, 1997; Nelson, 1999; Neufeld, 1997). Unfortunately, no studies at this point have documented if this kind of professional development leads to changes in principals' practice, or if it impacts learning environments for teachers. However, some researchers have identified a need for additional on-site support to help principals put new beliefs and understandings into practice (Hallinger, 1992; Nelson, 1997).

At the same time that research on the administrative role in instructional reform has come to support professional development for principals, new understandings have been reached in regard to what effective administrator professional development looks like and, more generally, what kinds of environments best foster learning for children and adults. Research into professional development for administrators reveals a number of principles for effective learning

environments: including instruction as part of the content of professional development; drawing connections between instructional theory and administrative practice; engaging principals in teaching and learning themselves and modeling leadership practices; providing opportunities for them to use practices and reflect; and creating collegial support systems (Evans and Mohr, 1999; Nelson, 1999). These link closely to recent research on learning, which found that constructivist pedagogy leads to the most effective learning environments for both children and adults. A recent report by the National Research Council, titled *How People Learn* (Bransford, Brown & Cocking, 1999), provides a helpful framework for looking at the different strands of constructivist teaching and learning within and beyond the context of principal professional development:

> A *knowledge-centered environment* organizes the work of teaching and learning around particular content to help students "'learn their way around' a discipline." (p. 127). Knowledge-centered environments organize student work around activities that are "structured so that students are able to explore, explain, extend, and evaluate their progress" (p. 127).
>
> A *learner-centered environment* is one that attends to "...the knowledge, skills, attitudes, and beliefs that learners bring to the educational setting" (p.121). Student-centered, or constructivist, teaching practices seek to engage the learner in actively building new understandings and skills – "constructing a bridge between the subject matter and the student" (p. 124).
>
> *Assessment that supports learning* provides learners with opportunities for feedback and revision or refinements of work. The learners' thinking is made visible – through discussions, papers, or tests – so that feedback can be used to enrich their understandings (p. 128). Not only does continuous formative assessment help learners to assess their own and peers' work, it helps teachers to assess and refine the learning opportunities they construct in their classroom (p. 129).
>
> A *community-centered environment* of a classroom or school engenders norms for people learning from one another and continually attempting to improve (p. 132). Norms of community-centered environments support risk-taking and regard mistakes as a normal part of learning.

This paper offers further evidence of the importance of constructivist professional development for principals engaged in instructional reform. It looks at how a consortium of

professional development organizations involved with the Students at the Center initiative in Philadelphia involved principals in their work through a series of administrator institutes that ran parallel to professional development for teachers and parents. Through these institutes, principals acquired a deeper understanding of the kinds of teaching and learning the initiative sought and ways in which they could support specific kinds of teacher professional growth in their schools. By examining this model for principal professional development, I hope to provide ideas for future reform efforts, a basis for future research, and new understandings about what principals need to know and how they can learn it.

The Foundation for and Creation of the SATC Administrator Institutes

Students at the Center (SATC) is a four-year initiative funded by the DeWitt Wallace-Reader's Digest Fund. The initiative aims to foster constructivist philosophies and student-centered practices in urban classrooms in Chicago, New York, and Philadelphia. In each city, a consortium of professional development organizations (PDOs) collaborated to design and carry out SATC. Each site chose to focus its efforts in different ways, although all three designs incorporate both on-site and off-site professional development work with teachers and schools[2].

In Philadelphia, four PDOs comprise SATC: Beaver College, the Franklin Institute and Science Museum, the Philadelphia Education Fund (PEF) and the Philadelphia Writing Project (PhilWP). SATC works with two of the 22 clusters that form the School District of Philadelphia. Each of the two SATC clusters contains one comprehensive neighborhood high school, one

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[2] Because of the differences in design among the three sites, it is important to stress that this paper focuses solely on SATC in Philadelphia. Descriptions of SATC work given in this paper should not be generalized to the initiative as a whole.

magnet or specialty high school, and the elementary and middle schools which feed into the neighborhood high school. SATC offers a wide range of activities, including: on-site workshop series, off-site courses during the school year and summer, summer practica, minigrants for teacher teams, and a parent program which brings parents into classrooms to work on constructivist lessons. During the first year of the initiative, all 32 SATC schools had access to all of the activities. In the second year of SATC, 13 of the schools became Focus Schools, maintaining their access to all of the activities and increasing their available on-site workshop series hours from 10 to 30. The remaining 19 schools did not receive on-site workshop series or, starting in the third year, minigrants, but could participate in any of the other activities.

SATC required more of principals than simple vocal support. The PDOs tailored the on-site workshop series to individual schools; thus, principals played a key role in working with school staff to determine their needs and how the professional development would be planned and carried out. For some principals, this negotiation and planning required new ways of interacting with staff that went beyond administrator-driven faculty meetings. Also, some of the teaching practices teachers brought back from SATC professional development required new materials (such as math manipulatives or supplies for project-based lessons), extra time for planning with fellow teachers, and extended periods to carry out inquiry-based lessons. SATC PDOs also heard from teachers who participated in SATC professional development that they were concerned that principals would not support their use of constructivist pedagogy because the sights and sounds of constructivism were unfamiliar to the administrators (PDO liaison interview, 8/96).

Midway through the first year of SATC, the PDOs decided to offer professional development to address principals' needs and concerns[3]. While principals could participate in other SATC offerings, many of them had stayed in the role of coordinator rather than becoming active participants in professional development. A group of principals approached the PDOs to inquire about the possibility of offering professional development for administrators. One of these principals recounted why she felt it was important that SATC find a way to work with administrators:

> I knew that part of the grant was to support parents, teachers and administrators – and it had gotten off to a great start with teachers and parents – but no one had done anything for administrators.... And research says that if you're going to have real change in the building, the principal, the leader of that building, has to be really tied in and committed to it. Yet I feel, personally, that a lot of the professional development leaves out the needs of the principal. They focus primarily on the teacher because they are the closest to the child. (interview, 4/98)

PEF spearheaded the creation of the institutes, working with Beaver College and PhilWP to coordinate facilitators, course design and logistical matters such as academic credits for participation[4]. PDOs wrote about the general goals for the administrator institutes in their first year report:

> The Institute[s] for School Administrators [were] designed to examine critical issues, problems and perspectives of constructivist leadership. This new conception of leadership is based on the same ideas that underlie constructivist learning – adults learn through the process of meaning and knowledge construction, participation and reflection. (p. 15)

The SATC administrator institutes involved three quarter-long courses – Constructivist Leadership, Negotiating for Change, and Program Evaluation – which led to the Pennsylvania

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[3] Administrator institutes primarily occurred during the second and third years of SATC. The first course took place during the first year, and one cluster chose to continue to work with SATC to plan its principals meetings during the fourth year.

[4] Facilitators varied from course to course and between clusters. All facilitators came from either Beaver College or networks linked through PEF.

Letter of Superintendency[5]. The following brief descriptions of each institute are taken from the PDOs' year two and three reports.

> *Constructivist Leadership*: "During the institute and subsequent monthly meetings, administrators…formed a reflective community in which participants challenged their beliefs and assumptions concerning leadership, pushed one another's thinking, and grew to see themselves as 'theory makers.' By learning to adopt inquiry as a starting point for their work, principals began to look closely at the assumptions as values that shape their leadership. Through visiting across sites, principals explored how to build communities of learners in their schools and among their colleagues." (Year 2 Report, p. 16)
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> *Negotiating for Change*: "[The course] explored four important areas that help to sustain reform: curriculum and instruction, community involvement, budgets, and negotiations. Several experts were called upon to work with the administrators, including [Elaine Simon, James Lytle and Warren Simmons]. Throughout this series, administrators considered how leaders can negotiate for what is needed to maintain improvements in a school or cluster, how to define the role of the administrators, what local councils might do, how to redefine budgets to support change, and how to negotiate with local school councils, the union, and teachers to garner support for change." (Year 3 Report, pp. 14-15).
>
> *Program Evaluation*: "Participants [in the course] examined the concept of School Quality Review and discussed critical issues associated with it…Guest instructors for [the course] included Tony Alvarado, Elaine Fink, Norm Fruchter, Warren Simmons and Arlene Holtz [a Philadelphia principal]…[Participants] were provided with the opportunity to visit each other's schools to focus on leadership and instruction." (Year 3 Report, p. 14) Principals also had the opportunity to learn qualitative and quantitative methods for evaluating reforms and programs in their schools. (facilitator interview, 6/99)

Each of the two clusters had its own institutes, and some cluster personnel also participated[6]. The courses took place at conveniently located schools and offices in each cluster, and participation was high, with about three-quarters of the principals in each cluster taking part.

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[5] The Letter of Superintendency allows principals to apply for superintendent and other higher-level district positions. A fourth class, School Law, is required for the Letter of Superintendency but was not offered through SATC because the PDOs did not believe it could be offered in a way that focused on constructivism. Instead, principals took the course through Beaver College without SATC funding.

[6] The cluster personnel who participated in the administrator institutes were Teaching and Learning Network coordinators and facilitators. The Teaching and Learning Network in each cluster coordinates professional development, including courses, workshops and classroom consulting.

While the PDOs focused on supporting principals' work with SATC in the institutes, they also worked in the shadow of a high-pressure district context. Throughout SATC's existence, the School District of Philadelphia has been engaged in its own reform initiative, "Children Achieving." Children Achieving focuses on the School Performance Index, a multi-faceted measurement of school growth which integrates test scores on the SAT-9, staff and student attendance and a variety of other measures[7]. The Children Achieving plan also formed the Teaching and Learning Network and mandated the creation of small learning communities (SLCs)[8] in schools. In addition, the school district released a set of standards and curriculum frameworks that endorsed constructivism as the preferred philosophy of teaching and learning for the district. While the focus on constructivism created much support for and interest in SATC's work, the PDOs also encountered high teacher and principal stress due to the pressure to increase scores on the School Performance Index.

This paper analyzes data from four years of research on the SATC initiative. The data consist of course observations, interviews with course facilitators and coordinators, and interviews with participating principals and cluster personnel. Annual interviews were conducted with five participating principals during years two through four of the initiative[9]. Attributes of each interviewed principal appear in the table below.

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[7] The district expects each school to make incremental progress in improving their School Performance Index scores. Schools who exceed goals receive monetary rewards; schools whose scores decrease are placed in a School Support System that can lead to reconstitution.

[8] Small learning communities (SLCs) are cross-grade groupings of classrooms; for example, an elementary school could decide to have two K-5 SLCs or one K-2 and one 3-5 SLC.

[9] Some principals were interviewed more than once a year due to their participation in other aspects of our documentation of SATC. One principal left the district before year four and thus was only interviewed twice.

Principal Name	Grade Level of School	Cluster	Years as Principal
Catherine[10]	6-8	Louis[11]	5-10
Karen	K-5	Louis	5-10
Leah	6-8	Park	5-10
Mary Jo	K-5	Louis	1-5
Sara	K-5	Park	1-5

In addition, we spent time in all five of the principals' schools, although the amount of time ranged from one-time visits to SATC professional development to extensive classroom- and school-level observations and interviews over a four-year period.

Curriculum and Pedagogy of the Institutes

As described above, each institute focused on a specific area of administrative practice, although all integrated the notion of constructivist leadership. In addition, facilitators used constructivist pedagogy to teach the institutes. Since the focus of the SATC initiative is to foster constructivist teaching and learning practices, the use of constructivism created a direct link between the administrator institutes and the other work being conducted by the SATC PDOs. Administrators experienced the same kinds of teaching and learning they sought to foster in their teachers' classrooms and professional development similar to that offered to teachers and parents. Below, the ways in which the administrator institutes embodied the four strands of constructivist pedagogy laid out by the National Research Council are explored in more depth.

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[10] All names are pseudonyms.
[11] Cluster names have been changed.

Grounding Principal Professional Development in Knowledge about Teaching and Learning

With the administrator institutes, the SATC PDOs hoped to give principals an understanding of what constructivist teaching and learning looks like in classrooms and how they could support and foster constructivist pedagogy in their schools. Most participants already had some familiarity with constructivism when the administrator institutes began. The SATC initiative began its work with schools prior to the institutes. As a result, principals had become acquainted with constructivism through working with the PDOs to coordinate on-site work and from what teachers brought back from SATC professional development. In addition, a small number of principals participated in the planning of SATC's work in Philadelphia, and the district's reform agenda created additional interest in and pressure to learn about constructivism. Yet, many principals did not feel like they had a firm grasp of constructivist teaching and learning. As Catherine said during her Constructivist Leadership course, "I'm always asking teachers to do with children what I'm not sure that I can do with them" (observation, 5/97).

The lack of extensive experience with constructivist teaching and learning among most principals pointed to the need for principals to gain knowledge of what constructivism looked like in classrooms. However, the institutes extended beyond helping principals to understand and support teacher practice. They also offered principals an opportunity to internalize constructivist philosophy for themselves as leaders. By doing so, the PDOs hoped that principals would be able to support and model constructivism in their own practice. The institutes used four approaches to foster deeper understandings of constructivism in the contexts of classrooms and administrative practice: allowing principals to experience constructivist practices for learning and assessment; giving principals an opportunity to observe classrooms using a constructivist framework; making explicit links between constructivist teaching and learning and principals' work; and bringing in experienced constructivist leaders to share and discuss their experiences.

Like teachers, principals had to become accustomed to the looks, sounds and feels of constructivist classrooms. One approach was to have principals themselves experience constructivist teaching and learning. Mary Jo explained how facilitators gave principals an opportunity to experience constructivism as students and to link that to their work as administrators:

> [The PDO liaison who plans the institutes] always brings something to the table to expand on Students at the Center and how [principals] connect with that.... I don't think some of us knew a lot about constructivism, and [the hands-on experiences they] did with us were good because it made us understand what projects should look like or [what performance assessment] sounds like and looks like. We had to work together in a group of three...and we had so much fun, and at the end of it we had to come up with a plan, an assessment tool. At the end we shared, and we talked about what worked and what didn't work.... We had to talk about the assessment piece, how we could incorporate that into classrooms in our schools, and how we could get teachers actively involved. (interview, 3/00)

By engaging in constructivist lessons, principals had an opportunity to see a glimpse what constructivist classrooms would look like and had a shared experience on which they could collectively build connections to their roles as leaders. Karen also found this kind of activity valuable and talked about how it shaped her thinking about classrooms:

> You have to actually be a participant to see it, to know what you are looking for when we have to go in and observe teachers. We have to be able to know [that constructivism] is okay. The kids are learning. Even though in our eyesight we may say, "This is strange." I have one teacher, well, two, who participated in the [SATC] summer practicum. They really do a lot of [constructivism] in their classrooms, and I'm standing in the [classroom] door one day. They are breaking up into groups to do the science lesson.... From my point of view it looked like it was totally chaos.... When we do our observation it's "Is the environment organized, neat, orderly, conducive to learning?" Some of those things you have to stop and say, "Well, yes, in a way, but maybe not in the traditional way." So [the administrator institutes] give us an opportunity to see and understand that better. We have to change our way of thinking. (interview, 3/99)

Building on the principals' personal experiences with constructivism, facilitators had participants observe classes in another principal's school using an observation form specially designed to make them look for constructivist practice[12]. This both gave the principals direct experience with constructivism in a classroom and tied directly to a role they performed as school leaders. The observation form included such things as student engagement and cooperative grouping, and involved writing comments out rather than checking off boxes. After the observations, the principals shared out what kinds of instruction they saw and discussed what they thought. Karen explained how seeing a constructivist classroom outside of her school helped her to step out of her usual thinking about classrooms: "It was good to see somebody else outside of your building. It is almost like you know what you have. You don't know what you don't have. You may be missing something" (interview, 3/99).

In order to help principals see how constructivism could apply to administrative practice, facilitators again placed principals in situations where they experienced constructivism for themselves. For example, in the Park Cluster Program Evaluation course, the facilitator worked with principals to help them understand how to ask good, researchable questions about their schools. The facilitator explained:

> The first class, I think I did a lot of talking to them, but after that most of it was them working together to generate learning.... In other words, they only way they learned how to pose significant questions was by working in groups and struggling over creating questions. We then came together and created the questions as a group of the whole. And then we looked at the responses – we analyzed them in groups. And then we put that on big chart paper and looked at it. So my idea was to teach the entire course that way. And I believe I did. (interview, 6/99)

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[12] While at the beginning of the administrator institutes the School District of Philadelphia's observation form was fairly traditional, the district later changed its form to be more in line with constructivist teaching and learning. Similar to the form SATC used, the new district form asks principals to look for aspects of constructivism, such as alternative assessments and project-based learning, rather than a neat and orderly classroom environment.

Facilitators also had principals participate in processes, such as school quality review and negotiation techniques, which they could then take back and use in their schools. This modeling of concrete leadership techniques struck the principals as particularly valuable. As Catherine stated, "I think if you were to ask any of the administrators [about the processes], we still talk about it and still use it. That was the most useful thing I have had as a professional.... All the principals said, 'Why didn't they teach us these kinds of processes when we were in school to be an administrator?'" (interview, 4/98).

Finally, facilitators brought in guest speakers, such as local superintendents, experts on specific processes and programs, and national leaders such as Tony Alvarado, to talk about and discuss their own experiences as constructivist leaders. Sara described the value of having guest speakers, connecting it back to her own work with teachers: "It personalizes the matter to be discussed. It brings it to a humane level. I think it makes it more life.... I can be a great principal and have all the information I need to present, but if my staff's not talking or not paying attention when I'm presenting, it's not worth anything" (interview, 2/00).

As described above, the SATC administrator institutes strove to give principals a deep and meaningful understanding of constructivism through a variety of lenses. By discussing constructivist philosophy, experiencing it themselves and seeing it in practice, participants were able to develop concrete images of constructivist practice in classrooms and as school leaders.

Principals as Learners in Learner-Centered Professional Development

The learner-centered approach in the administrator institutes began even before the courses did. As stated earlier, the institutes came about in part due to requests by principals for an SATC course that would meet their unique needs. Planning for the institutes happened in cluster-based committees of SATC PDO liaisons, cluster personnel and principals. While at first

the cluster leader chose the participants for the committees, in later years participating principals selected the principal representatives. Institutes occurred at times and places that would be convenient for principals. Facilitators frequently would ask participants about topics that they would like to discuss in the course either prior to or during the first meeting. Karen recounted how the planning process would work:

> What [SATC would] try to do is give a course around what we mainly do in schools, to support us. So we meet with the professor and try to outline what it is that we feel that we need in the course, and then they develop the course around what we want as well as meeting the state requirements for the Letter of Eligibility [for the Superintendency]. (interview, 4/98)

By involving participants from the very beginning, SATC worked to ensure that the institutes would meet participants' interests and needs.

Throughout each course, SATC focused on giving principals an experience that would directly relate to the work they do as administrators and the contexts in which they work. For example, during one meeting of the Constructivist Leadership course in the Louis Cluster, the facilitator had planned to model the use of a specific process by using it to look at the topic of student attendance. However, during a discussion it came out that some of the principals were thinking about how to conduct reading groups in their schools. The facilitator decided to drop his pre-selected topic and use the process to look at reading groups instead. He was not explicit about this change until after the process ended, when he spoke to the group about how he had just modeled a democratic leadership style (observation, 5/97). Other structures, such as the use of "head" journals and KWHL sheets[13], helped facilitators gauge what participants were thinking

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[13] Using "head" journals involves free writing about whatever one is thinking about for the first 10-15 minutes of a session, followed by sharing out with the group. KWHL sheets have participants document what they Know, Want to know, How they're going to learn it, and what they have Learned.

about at the beginning of each session so they could incorporate issues encountered in principals' day-to-day experiences into the course. Sara explained to us how the opening conversations of her Constructivist Leadership course helped the participants ground what they were learning in real work:

> For the first 20 minutes of class, we would just share what was in our heads, and it would all be the same thing.... And we would use it as a start-off point to get our discussions going. We would constantly make reference to whatever new material we were being taught that day... "Oh my goodness, this could apply to this situation that this principal just spoke about." So [it] brought everything to real life. It wasn't textbook jargon, it was constantly connected to what was going on in our schools. (interview, 3/99)

Through these opening conversations about pressing thoughts and issues, participants generated a set real-life, concrete, and collectively discussed situations. This formed a foundation for connecting theory to practice in a learner-centered way, as the actual complexities of participants' work were woven into their efforts to understand and use ideas of constructivist leadership.

Although the administrator institutes stemmed from the SATC initiative and, as a result, worked to help principals understand constructivism in the contexts of classrooms and leadership, the PDOs did not leave out the other contexts in which principals work. This proved particularly important in the high-accountability, high-pressure environment the School District of Philadelphia created with its Children Achieving plan. By bringing the district context into the conversation, the administrator institutes extended the connections participants could make between what they learned in professional development and their daily work. For example, in the Louis Cluster Program Evaluation course, participants evaluated the new district summer school program and talked about how they could implement the program in their schools. As Karen explained:

> A lot of times the professor would ask, "What is of interest to you?" When we were in Program Evaluation...we [had] just gotten a directive [from the district], "You're having

> summer school. Here's the dollars." What do you do?... And it was something we could all relate to.... We were given the opportunity to shape, in some respects, what was the topic and what would happen in the course. At the same time, learning the theories behind 'how do we go about evaluating.' (interview, 2/00)

Similarly, in the Park Cluster Program Evaluation course, principals used their district SAT-9 data to learn quantitative research methods and discussed how qualitative methods could be used to enhance their picture of student achievement (observation, 5/99). In sum, the administrator institutes engaged participants by utilizing participants' pressing and ongoing needs and interests in the service of learning constructivist philosophy and practices.

Building Reflection and Assessment into Principal Professional Development

Reflecting on one's own learning and the learning of the whole group are a vital part of constructivist pedagogy. By doing so, teachers and learners alike can see where they've been, where they're going and how best to get there. In addition, assessment to support learning acknowledges that not everyone may learn everything at the same time. In this way, constructivist assessment techniques feed back into the learner-centered pedagogy described above, as it is one way to gauge which strategies have been most successful for each student, and what topics may not have been well understood and need to be covered again. Through both ongoing processes and final projects, the administrator institutes took practices, which embody assessment to support learning, modeled them for participants, and allowed them to experience them firsthand.

The use of ongoing reflection and assessment processes throughout the institutes allowed principals and facilitators to continually assess their progress and reflect on the course, making changes when necessary. One widely used strategy was having participants fill out a reflection sheet at the end of each session. Comments were compiled and returned without names at the

beginning of the next session. Then, as Sara explained, "We go back and reflect on: What have we learned from the class? What do we need further clarification about?" (interview, 4/98). In addition, as described above, some facilitators used the KWHL sheets and "head" journals, which gave principals an ongoing record of what they had learned, what they hoped to learn and issues which came up along the way. The value of these reflective processes was described by Catherine, "At each session we have to do a reflective piece, and that really makes you think about how you have proceeded with what has occurred in your building and what's your next step" (interview, 4/98).

Facilitators also gained from ongoing formative assessment. In the Louis Cluster Constructivist Leadership course, reflection sheets indicated that near the end of the course, participants still did not feel completely comfortable with the material covered. In response, the facilitator changed the agenda for the final session and the assignment for the final project so that the group could have time to spend discussing and working through the topics and processes principals found challenging (observation, 5/97). By taking participant feedback and altering the course in response, facilitators tailored each session to participants' interests, learning styles and needs, which embodies both assessment to support learning and the learner-centered approach described above.

The SATC administrator institutes also demonstrated how assessment to support learning can be used in the context of projects and assignments. For each course, participants carried out either a final project or a portfolio of their work. In all cases, these assignments involved authentic tasks conducted in the context of one's own school and reflections on one's own learning; at no point were principals tested on their knowledge of the material or processes covered. For example, one final project option for the Louis Cluster Constructivist Leadership course was to "Write a letter to a colleague describing a critical work experience you had during

the past month and reflect on the course's impact on how you thought about and acting during and after that experience" (course handout, 5/97). In the Park Cluster Program Evaluation course, each principal designed a way to evaluate a program in his or her school. The project required a paper that answered the following questions:

1. Identify the program you want to evaluate.
2. Who will you engage in the process of developing good questions?
3. What questions do you want to answer? This is preliminary. Other questions will emerge after you begin gathering data.
4. What data in kind of data do you need to collect to answer these questions?
   a. Describe how you will use qualitative methods.
   b. Describe how you will use quantitative methods.
   c. Discuss ways to triangulate your findings in order to achieve valid and reliable data.
   d. Describe how and when you will collect baseline data.
   e. Who will you work with to collect and analyze your data?
5. What problems can you anticipate at each stage of the process?
6. Who will you present our findings to? (Who is your audience?) How might you display or share your findings? (Report, graphs, charts.)
7. Discuss the difficulties you might encounter in collecting data, working with a team for data analysis, and sharing your questions and findings with the larger community. (course handout, 5/99)

Through these kinds of assignments, participants could reflect on what they had learned and have concrete experiences putting constructivism into practice, rather than feeling pressure to remember and recall the intricacies of every process and theory covered. In addition, principals were encouraged to work in groups in some cases or, in other cases, had critical friends who helped them think about their projects or portfolios and how to carry them out. Mary Jo described how reflecting on assignments personalized the courses for her:

> [In past professional development] I couldn't really talk one-on-one with the presenters or be involved in an activity that we would have to report on later. [In the administrator institutes] we had things that we had to do, and we would come back the next month and share what we had done and write about it and share with our critical friends. And so that is what made it more personalized.... It was more meaningful to me because I felt that it was more one on one. (interview, 3/00).

In each course, assessment of final projects and portfolios involved a rubric that was either designed by the participants or discussed by the group. The institutes focused on documenting change, rather than becoming a constructivist leader immediately. Sara recalled a conversation with her critical friend for a final portfolio where she realized this:

> I said to [another principal], "What kind of artifacts are you bringing because are mine showing enough movement?" And that's when he told me to calm down, "You're moving. That's what the course wants you to do. It didn't say for you to get the constructivist award [the last day of school]. We're asking for movement. You're here for many more years.... I walked away from that answer and said, "Yeah! That's what they want. They want artifacts to show movement." (interview, 4/98)

This focus on qualitative change rather than meeting arbitrary standards of performance matched with and supported the reflective and authentic nature of the assignments. By using these assessment strategies, the SATC PDOs hoped that principals would come to understand the value of assessment to support learning rather than to assign a grade and the importance of altering one's practice to meet learners where they are.

Fostering Community as an Environment for Principal Learning

Perhaps the most striking comments principals gave about the administrator institutes regarded the collegial relationships they formed with their peers and the cluster personnel who participated. Similar to the feelings of workplace isolation expressed by many teachers, all of the principals we spoke with talked about how, until their participation in the institutes, they had few opportunities to get support from other administrators. Some principals felt that their isolation was even more extreme than that of their teaching colleagues, as Sara explained:

> When you're a teacher, you have a cadre of people to go to, you have a support group in your building.... When you're the principal...whom can you really go to for help? You can go to other principals in your cluster, but where's the time? You're in your building all day, isolated, and when you call [other principals], you get the same thing as when you call me, "She's busy, she's out of the office, she can call you back." And then you attend principal meetings together, but our cluster leader has such a packed agenda that

> you have no time to share with one another. You have to follow her agenda. [The administrator institutes were] the first opportunity where you could bring up things that go on in your building and look for advice from other peers (interview, 4/98)

To help break down the isolation of the principalship and create a community of learners, SATC used a variety of formal and informal methods for fostering collegiality. This community-centered approach, in turn, helped create a safe and supportive environment for participants to take risks and push the boundaries of their thinking.

The basic design of the administrator institutes involved cluster cohorts taking the courses as a group. The School District of Philadelphia had split into 22 clusters[14] just prior to SATC, so in many cases principals in the same cluster only knew each other through cluster meetings. In addition, the Teaching and Learning Network (TLN) formed at the same time as the clusters, so in many cases principals did not know the TLN coordinators or facilitators. Through the administrator institutes, SATC created a situation where administrators in each cluster could meet and engage in conversations that went beyond the brief chats they had during breaks in cluster meetings. As Sara explained:

> When the region was split, in our particular situation we were divided into three [clusters], so then you were just left with the fifteen [schools]. And some of them you did know well, others you didn't really know at all, and then you had new staff [the Teaching and Learning Network] come on board. So I think [the administrator institutes] made it more cohesive where now you can pick up the phone and call one of your own colleagues [in the cluster] instead of outside the cluster, someone else you may have known. (interview, 4/98)

This sense of collegiality also extended to cluster personnel. Principals and TLN staff alike talked about how they appreciated having an opportunity to talk about the goals and work of the TLN, and to share information about schools.

The other formal structure for fostering collegiality among administrators involved the creation of critical friendships. Pairs of principals visited each other's schools, deciding ahead of time what would be focused on in each school. They then shared their thoughts with each other in both structured and informal ways. Keeping in line with constructivist pedagogy, facilitators worked with participants to determine the structure and focus of the critical friendships. Principals also had input on who their critical friend would be. Sara explained why this kind of input was important for her:

> You can't choose friends for people. It has to be a level of trust and understanding. So we were allowed to pick our critical friend.... You can understand [criticism] better [coming from a friend you chose] than coming from someone who you really didn't know. There is a level of trust and honesty.... Sometimes you need a critical eye. You may have missed something. (interview, 3/99)

Principals with whom we spoke brought up critical friends as an experience that they found valuable, although some found their partnerships more challenging if they worked at different school levels. Mary Jo, an elementary school principal, had middle and high school principals as her critical friends. At first she found it difficult to find common ground due to differences in school size and curricula, particularly when her critical friend was the principal of a middle school not attended by her students (interview, 5/99). However, in the last year of SATC, the principal of the middle school which Mary Jo's school feeds into became Mary Jo's critical friend. Mary Jo decided that she would use the opportunity to forge connections between the two schools. For example, Mary Jo invited her critical friend to reflect on portfolio assessment and discuss how Mary Jo's students' portfolios would be used when they reached middle school (interview, 3/00).

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[14] The district had previously been divided into six regions for elementary and middle schools, with high schools

Although formal structures for encouraging collegiality have been successful, perhaps the opportunity principals spoke of most was simply having the time to talk with peers about what was happening in their schools. Unlike agenda-driven cluster meetings, principals found the administrator institutes gave them time to share problems and issues, and engage in collective problem solving. In the words of two principals:

> Catherine: "You have an opportunity to share and talk with other administrators about what's happening in their buildings, share experiences, [and] you get new thought.... I'm one of those more spontaneous people, and sometimes I leap too quickly. And having colleagues who are just a little more cautious than I grounds me and [makes me say], 'Oops, you have to stop and think about this.' And yet those persons who I think are really cautious – those of us who move very quickly kind of pull them along a little faster." (interview, 4/98)
>
> Leah: "The discourse was around articulating problems and getting feedback from other administrators on how they would solve those problems. And that's invaluable. I really wish, to be honest with you, that our [cluster] principals' meetings were centered around that kind of structure. I think that that would be much more beneficial to us." (interview, 2/00)

In addition, Sara explained that the administrator institutes gave her "as sense of therapy...that what goes on in my school goes on in all the other schools" (interview, 3/99). As described above, the issues brought up in these conversations would frequently be interwoven into other institute activities, demonstrating to principals how the institutes connected to real work. The encouraged informal interactions also modeled the kind of collegial environment PDOs hoped principals would foster in their schools' meetings and professional development.

The administrator institutes helped principals create a community of learners and web of support both in the context of SATC and beyond it. However, participating principals expressed concerns that those who chose not to participate and those who joined the cluster after the end of

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reporting to a separate office.

the institutes would not have a way to engage in similar work. Leah, who works in the Park Cluster, said, "The cluster has not yet developed a mechanism by which principals who participated in this institute can come back and share with a larger group" (interview, 2/00). The Louis Cluster Leader also noticed that it was difficult to engage non-participating principals in constructivism. She explained, "One of the challenges there was that [people who were participating] were beginning to grow, and the other principals who were not part of it didn't have that body of knowledge." In response, she worked with SATC to plan and conduct some of her cluster principals' meetings. The SATC PDO liaison who coordinated the administrator institutes expressed hopes that similar work in cluster meetings would continue beyond the end of SATC, stating, "the core pieces of the work that are really very important – the cross-visitation, the critical friends, the establishment of a collegial community of administrators – it doesn't cost them anything to do that. It's just them wanting to do it and putting it on the calendar" (interview, 10/99).

Changes Resulting from the Administrator Institutes

All of the principals we spoke with described numerous ways in which the SATC administrator institutes changed their beliefs and practices, although without spending considerable amounts of time in their schools it is difficult to gauge how deeply embedded these changes actually are in practice. While we only spoke with a small percentage of the participants, their comments are reinforced by similar reports of principal change from the SATC PDO liaisons, cluster leaders and members of the cluster Teaching and Learning Networks. The majority of the reported changes fall into four categories: gaining a better understanding of constructivism, using constructivist leadership techniques, focusing more on instruction and using data and budgets to do so, and seeing learning as part of their role as principals.

Understanding Constructivism

Principals reported that participating in the administrator institutes gave them a deeper understanding of constructivist philosophy and pedagogy. Most of the principals spoke about this change in the context of being in classrooms and discussing teaching and learning with teachers. For example, Mary Jo and Karen talked about how they changed their observation practices as a result of what they learned in the institutes:

> Mary Jo: "When I go into classrooms I do look at things differently.... I look more now at [the teacher's] presentation to the students, how involved she is with what the students are doing as far as instruction and the standards.... I conference with teachers more now about how they need to change some of the things that they're doing in order to improve the achievement of our children." (interview, 3/99)

> Karen: "[When I used to observe classrooms], noise was not good. You wanted the kids quiet, you wanted them in their seats, you wanted them in rows and learning, teacher is teaching. The constructivist teaching and learning method doesn't believe in that. Students construct the knowledge so there is going to be a level of noise. The kids are going to be moving around the room.... [When we did observations], we would sit for 45 minutes to an hour, and you would take notes and x-out boxes. This way we are up and engaged with the kids. We are moving around the room. We are asking the kids questions during the lesson so we get a better understanding of what is going on." (interview, 3/99)

Cluster Leaders and TLN Coordinators also observed this change in principals' attitudes toward classroom practice and talked about more enthusiasm toward constructivism among principals as a result of their greater understandings of it. As the Louis Cluster Leader said, "I see a lot of building on what the children know and the principals' awareness of that. I see interaction and student engagement and more of the principals understanding that students need to be engaged. They don't need to be sitting terrified in front of the fount of knowledge" (interview, 5/99).

Some principals also spoke about having a deeper understanding of constructivism in the context of professional development. Karen talked about her vision of professional development for teachers, formed in part by her participation in the administrator institutes. She explained:

> It's not someone standing there lecturing. They have to see it, you know. And that's important.... I purchased [the teachers in my school] a book about constructivist teaching and learning, but it is hard to do if you haven't seen it. That's what [teachers] need.... [Also], I think it has to be valuable for the person attending professional development. They have to see a need for it in order to participate fully in it.... I think the person has to show an interest, and the professional development has to be around something that they're doing to make it worthwhile. (interview, 2/00)

Mary Jo described how she took both the content and the pedagogy of the administrator institutes and used them to shape an all-day professional development for her staff:

> I did the whole session on constructivist teaching. A lot of what I got was from Students at the Center. I shared some of the papers and things that [they] had given us [in the institutes].... They had to come up with a theme and work in groups. I said, "You have to get a box...you have to work together with another teacher, and for the next time that we come together, you have to come up with an activity, a lesson, an assessment piece on the material. You have to...present how you can use this box as an instructional piece in your classroom.... I wish you could have seen what they did. They were wonderful. They came up with puppetry. They had games. One teacher had a box, and she made it into a cube. It was kind of like a die that the kids could throw after they read the literature, then they would answer questions. So it was really a wonderful piece they ended with, and I got that from [the institutes]. (interview, 3/00)

Another change Karen reported was giving teachers more voice in determining what kinds of professional development her school would offer (interview, 2/00). The Park Cluster Leader also observed this difference in principals' attitudes, stating, "It's not so much feeding [professional development] to them but more 'What does the faculty want and how can I deliver and how do we answer their questions?'" (interview, 3/99). Some participants we interviewed also discussed the value of specific professional development techniques they had experienced in the institutes, such as modeling constructivist practices, using guest speakers, having people experience constructivism as learners, and connecting theory with practice.

Engaging in Constructivist Leadership

Leadership styles and practices comprised perhaps the most common area in which principals reported making changes. In terms of style, principals spoke about becoming more

open and giving teachers a greater voice in decision-making. For example, Sara talked about how she turned over the planning for her school's faculty meetings to teachers:

> Before maybe I would run the meeting and design the agenda. And now, you know what I do? I write a note to the third-floor small learning community, "You're responsible one month from now for a 45-minute presentation on how your small learning community is utilizing the materials in the science tub [received through their SATC minigrant]. Put your teachers into cooperative groups, using the materials, and do experiments." Well, it's working. They did a Jeopardy! game. I wouldn't have thought of that. (interview, 4/98)

Leah linked her constructivist leadership style and resulting changes in her practice to growth in SATC participation among teachers at her school. "I'm modeling the kind of behavior that I expect from teachers. I'm not just talking about it. I'm walking that talk. I think that's how we were able to get teachers involved [in SATC] here.... Seeing the principal involved in bringing some of what I'm learning back to my faculty meetings and back to professional development, I think it helps" (interview, 5/99).

All of the principals we spoke with mentioned specific processes that they had taken from the administrator institutes and used at their schools. Catherine explained numerous ways in which these processes enhanced her leadership skills:

> I think the most important thing that I have learned are the processes for problem solving with staff.... I find that I am less didactic in my approach, I'm much more open.... I have learned how to design staff development sessions in such a way that they are inclusive of more people. That you can identify problems in a non-threatening way, and that you can help people find solutions and stay focused if you have a design that will allow that, instead of a free-wielding kind of thing.... And for me personally, those things were very, very important because I really didn't know how. I knew that it needed to be done, but I didn't know where to go for help. (interview, 3/99)

More specifically, Catherine used strategies from the institutes with her staff to help them work on school climate issues and design a school improvement plan. Karen used constructivist leadership processes to get input from the staff on the design of the school's new library (interview, 2/00). Leah had her staff take a leadership style inventory used in her Constructivist

Leadership course and not only found out the styles of her staff, but also discovered that she had not effectively conveyed her own style to them (interview, 10/99).

Focusing on Instruction

Principals also reported a renewed focus on instruction. By pushing participants to think about theory and practice instead of the dealing with daily crises and district pressures, the administrator institutes created an environment for principals to rethink their role as leaders. As Leah explained:

> You almost get into a syndrome where you think you know it all, and really you're just mired in the little picture. You've lost the big perspective. And that's what the course is helping me to rethink.... I was just in the everyday, reactionary, getting through the school day, forgetting about the big picture with respect to student achievement...getting from this moment to the next. And forgetting that...our mission is to educate children effectively. (interview, 11/98)

The Louis Cluster leader also noticed some of her schools' principals taking on the role of instructional leader. She said, "So, the change has been – what a novel idea – 'I don't need to just manage this building and facility, but I need to understand and lead instruction'" (interview, 5/99). A specific example she gave was that of a principal who, at the cluster leader's suggestion, decided to leave the first two-and-a-half hours of each day aside to work on instructional matters, rather than dealing with parents, disciplinary matters, and paperwork.

Other specific ways in which principals described implementing a stronger commitment to instruction involved their use of data and the priorities they make in creating their schools' budgets. Principals spoke about rethinking their approaches to data and budgets in light of what they learned about constructivist leadership. Sara lauded her Program Evaluation course for teaching her how to use her district SAT-9 data in a way that would be useful for her school. She recounted:

> I get massive data from the school district that I tend to review and file away, and not use appropriately. However, I am now acting appropriately on my data because for the very, very first time as principal I actually knew how to look at the data, and what it was to be used for. (interview, 2/00)

As part her final project for that course, Sara disaggregated her school's SAT-9 scores by small learning community and discovered that one SLC's scores were far below the others in reading. This information then tied into how she decided to use a new reading program in her school. Other principals reported changes in their budgeting practices. As Leah said, "It made me look at the budgeting process differently – how do you get more people involved, and how do you make the budget reflect the instructional program and not vice versa" (interview, 5/98). The SATC PDO liaison who coordinated the institute noticed concrete changes in some principals' budgets. After a discussion in one administrator institute on the effect of extended days and years on student achievement, a number of principals in that cluster chose to allocate money for extended day and year programs (interview, 6/98).

Incorporating Learning into the Principalship

Although less mentioned than the other kinds of changes, some principals also talked about how they began to see themselves as learners. The institutes gave participants the time to learn and think about theory and practice, a rarity in principals' busy lives. As a result, Leah found herself becoming interested incorporating reading research into her schedule: "I actually picked up a book and read it. And I'll pick up a journal and read an article. I was going to do that at one point in my life. I can't tell you how long it's been since I've had that kind of sustained interest in reading – theory and practice" (interview, 5/98). In addition, the constructivist approach used in the administrator institutes provides a safe and supportive environment for principals to admit to gaps in their knowledge. The Louis Cluster TLN Coordinator explained

that in one course she attended she felt that "it was the first time that some of principals admitted to themselves that they might not know that much about instruction" (interview, 5/99).

Some principals also came to an understanding that to be effective administrators, they needed to continue learning. According to the Louis Cluster Leader, this led to one principal surveying her staff so that she could gauge her strengths and weaknesses and find areas in which to improve her administrative practice (interview, 5/99). Karen experienced a similar change in attitude, realizing that the SATC administrator institutes should not be the end of her professional development. She explained, "One [thing I've taken from the institutes] is not to stop learning. It is ongoing. It is never ending, and things are changing.... We are going to have to continue finding out what is new, what is working, if we are going to be effective in our schools" (interview, 3/99).

Conclusion and Implications

The SATC administrator institutes offer a unique look at professional development for principals that is directly tied to a cross-discipline instructional reform effort focused on teachers and classrooms. In addition, the institutes reflected a constructivist theory of teaching and learning, an approach which research shows fosters the most effective learning environment for children and adults (Bransford, Brown & Cocking, 1999). Comments from participating principals support the content and format of the institutes as providing an opportunity for administrators to learn about a reform and tie it to their role as school leaders, although further research is needed into how principals put this kind of professional development into practice. As a result of this research, I offer five implications for future research into administrator professional development and the design of instructional reform efforts.

- **Principals need opportunities to learn about reforms and how they can support them**. Reform designers frequently assume that principals are ready to support their efforts to foster teacher learning and change. This runs counter to research that indicates that administrators frequently lack the skills and knowledge necessary to create an effective environment for teacher professional growth. In the SATC administrator institutes, principals engaged in professional development focused on the initiative but tailored to the needs of school leaders. This unique combination resulted in changes in administrators' beliefs and practices consistent with the style of leadership sought by SATC. The experience of the SATC administrator institutes indicates that future reform efforts should further pursue professional development to support administrator involvement in instructional reform. In addition, more research is needed into how principals use this kind of professional development to help them shape learning environments for teachers.
- **Best practices for administrator professional development correspond to those of other learning environments**. Starting with the creation of principals' centers, administrator professional development has increasingly embraced constructivist pedagogy. The SATC administrator institutes provide further evidence that constructivist practices offer an effective environment for principals' learning, growth, and change. The knowledge-centered focus on constructivism gave principals an opportunity to begin forming deep understandings of constructivism in the contexts of classrooms and leadership practice. By taking a learner-centered approach, the institutes built off of participants' needs and interests, while acknowledging the complexities of their work. The continual use of authentic and reflective assessments pushed principals to think about what they had learned and how they could apply it in practice, while also giving facilitators an opportunity to reshape the courses to best meet participants' needs. Finally, fostering the formation of a community of learners among

participants provided the support and camaraderie necessary for principals to begin to engage in learning and change. In addition, the use of constructivist beliefs and practices allowed principals to experience the kinds of teaching and learning research has shown to be most effective for teachers and students, as well. Future professional development for administrators should build and expand on these understandings of how principals best learn.

- **Collegial relationships are vital to fostering administrators' learning and change**. In terms of workplace isolation, most educational research focuses on teachers. However, principals experience a similar, if not more extreme, lack of collegial relationships in their daily work. Most districts have not created spaces for principals to engage in meaningful conversations that go beyond chatting and complaining. By bringing together administrators around common issues of instruction and leadership, the SATC administrator institutes offered a unique opportunity for principals to interact with and find support from their peers. Through collaborative assignments, discussions, and processes such as critical friends, administrators helped one another understand constructivism and link it to their work and schools. In addition, they established relationships with one another that went beyond the context of the institutes and offered ongoing support for putting constructivism into practice. Reformers and policymakers should not overlook the value of collegial support in designing professional development for principals.
- **Principal learning and change must be supported by district contexts**. The SATC administrator institutes occurred in a district environment that encouraged the use of constructivist teaching and learning through its policies, standards, and curricula. In addition, the institutes linked constructivist pedagogy to the district contexts in which participants worked. Without these connections to the district, it is doubtful that principals would have been as willing to engage in extensive work around constructivism. In addition, one cluster

chose to extend its work with administrators by working with SATC PDOs to shape its principals' meetings. Integrating the notion of constructivist leadership into the ongoing work of the cluster shows promise in sustaining the work of the institutes beyond the end of the SATC initiative. Not only does it give participating principals additional opportunities to explore constructivist leadership, it pulls in principals who did not participate in the institutes, extending the collegial community throughout the cluster. These kinds of strategic partnerships and links among districts and professional development initiatives show much promise in supporting learning and change among principals.

- **Administrators need professional development and support beyond that offered by the SATC institutes**. While participants frequently mentioned the administrator institutes as some of the most valuable professional development experiences they'd had, they should only be seen as a promising first step. Most participants came to the institutes with a highly traditional and (until the recent district shift toward constructivism) institutionally supported beliefs about instruction and leadership. As a result, the administrator institutes offered a firm foundation for *initial* moves toward using and supporting constructivism. However, additional and ongoing professional development is necessary in order for principals to deepen and expand their understandings. Principals also need support in integrating what they have learned through professional development into their practice, through on-site consulting and ongoing support from colleagues. In addition, the SATC institutes focused on the cross-discipline aspects of constructivism in classrooms and leadership practice. As demonstrated through discipline-specific reform efforts, principals also require opportunities to reflect on and reshape their beliefs and understandings of content areas and how they are best taught and learned (Nelson, 1997; Nelson, 1998; Nelson, 1999). Researchers and

reformers alike should further explore the connections among instructional reform, professional development, and principal learning and change.

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